

CLAIMS

1. An organic or inorganic molecule that binds specifically to a site on MN protein to which vertebrate cells adhere in a cell adhesion assay, wherein said molecule when tested in vitro inhibits the adhesion of cells to MN protein.
2. The organic or inorganic molecule of Claim 1 wherein said molecule, when in contact with a vertebrate preneoplastic or neoplastic cell that abnormally expresses MN protein, inhibits the growth of said cell.
3. The molecule of Claims 1 and 2 which is organic.
4. The molecule of Claim 3 which is a protein or a polypeptide.
5. The molecule of Claim 4 wherein said protein or polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 107, 108, 109, 137 and 138.
6. The molecule of Claim 4 wherein said polypeptide is selected from the group consisting of SEQ ID NOS: 107, 108, 109, 137 and 138.
7. The molecule of Claim 1 wherein the site on the MN protein to which said vertebrate cells adhere in said cell adhesion assay is within the proteoglycan-like domain or within the carbonic anhydrase domain of the MN protein.
8. The molecule of Claim 1 wherein the site on the MN protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 10 and 97-106.
9. The molecule of Claim 1 wherein the site on the MN protein has an amino acid sequence selected from the group consisting of SEQ ID NOS: 10 and 97-106.

10. The molecule of Claim 1 wherein said vertebrate cells are mammalian.

11. The molecule of Claim 1 wherein said vertebrate cells are human.

12. A MN protein or MN polypeptide which mediates attachment of vertebrate cells in a cell adhesion assay, wherein said MN protein or MN polypeptide when introduced into the extracellular fluid environment of vertebrate cells prevents the formation of intercellular contacts and the adhesion of said vertebrate cells to each other.

13. The MN protein or MN polypeptide of Claim 12 which when introduced into the extracellular fluid environment of a vertebrate preneoplastic or neoplastic cell that abnormally expresses MN protein, inhibits the growth of said cell.

14. The MN protein or MN polypeptide of Claim 12 whose amino acid sequence is from SEQ ID NO: 97, from SEQ ID NO: 50, or from SEQ ID NO: 51.

15. The MN protein or MN polypeptide of Claim 12 whose amino acid sequence is from SEQ ID NO: 50.

16. The MN protein or MN polypeptide of Claim 12 which comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 10 and 97-106.

17. The MN polypeptide of Claim 12 that is selected from the group consisting of SEQ ID NOS: 10 and 97-106.

18. The MN protein or MN polypeptide of Claim 12 that is specifically bound by either the M75 monoclonal antibody that is secreted from the hybridoma VU-M75, which was deposited at the American Type Culture Collection under ATCC No. HB 11128, or by the MN12 monoclonal antibody that is secreted from the hybridoma

MN 12.2.2, which was deposited at the American Type Culture Collection under ATCC No. HB 11647, or by both said monoclonal antibodies.

19. A method of identifying a site on an MN protein to which vertebrate cells adhere by testing a series of overlapping polypeptides from said MN protein in a cell adhesion assay with vertebrate cells, and determining that if cells adhere to a polypeptide from said series, that said polypeptide comprises a site on said MN protein to which vertebrate cells adhere.

20. A vector comprising an expression control sequence operatively linked to a nucleic acid encoding the variable domains of a MN-specific antibody, wherein said domains are separated by a flexible linker polypeptide, and wherein said vector, when transfected into a vertebrate preneoplastic or neoplastic cell that abnormally expresses MN protein, inhibits the growth of said cell.

21. The vector of Claim 20 wherein said expression control sequence comprises the MN gene promoter operatively linked to said nucleic acid.

22. The vector of Claim 20 wherein said flexible linker polypeptide has the amino acid sequence of SEQ ID NO: 116.

23. The vector of Claim 20 wherein said expression control sequence comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 21, SEQ ID NO: 27 and SEQ ID NO: 91.

24. A vector comprising a nucleic acid that encodes a cytotoxic protein or cytotoxic polypeptide operatively linked to the MN gene promoter, wherein said vector, when transfected into a vertebrate preneoplastic or neoplastic cell that abnormally expresses MN protein, inhibits the growth of said cell.

25. The vector of Claim 24 wherein said cytotoxic protein is HSV thymidine kinase.

26. The vector according to Claim 24 wherein said vector further comprises a nucleic acid encoding a cytokine operatively linked to said MN gene promoter.

5           27. The vector of Claim 26 wherein said cytokine is interferon or interleukin-2.

28. A repressor complex that binds to the MN gene promoter.

10           29. The repressor complex of Claim 28 that binds to SEQ ID NO: 115 of the MN gene promoter.

30. The repressor complex of Claim 29 comprising two proteins having molecular weights of 35 and 42 kilodaltons, respectively.

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